lutely reliable. I have shown that a renal tumour may be in a median position, and that it may extend into the pelvis like an ovarian tumour; and there may even be, as in Baum's and Dumreicher's cases, adhesions to the pelvic organs; I have also emphasized the fact that such tumours may have the intestines over them or on the side of them, they being pushed aside or the mesentery even perforated, and it is well known that ovarian cysts sometimes have intestinal coils in front of and under them. Tumours of the kidney may be movable and those of the ovary immovable; the original location of the growth is only to be discovered in the early stages, and then perhaps is only made by accident. The puncture will enable us to decide in many cases, by giving proof of the presence of the epithelial forms peculiar to the ovaries, or the renal elements, such as the sediments of the urine, urea, ecchinococci (for this parasite has never yet been met with, so far as I know, in the ovary); but even these may deceive, for urinary constituents are not always found in the contents of nephritic cyst, and may perhaps be found in the ovarian (Hanauyn found allantoin), even ecchinococci may be present and furnish no evidence of their existence; and on the other side, again, cholesterin and paralbumin have been found in the kidney cysts. In such circumstances, the manual examination *per rectum* is of the greatest value, for by it can at least be proved whether the cyst has its origin in the pelvis or not, and by this help exceedingly to clear up the diagnosis, even when the origin itself cannot be reached."

Possibly we have occupied too much space with this examination of a single clinical lecture. If so, we plead in excuse, the high authority from which it emanates, and the interest attaching to a subject not yet entirely mastered and which will always present to the diagnostician his severest problems.

J. C. R.

ART. XXVIII.—*Die Kaltwasserbehandlung des Typhus Abdominalis nach Beobachtungen aus der Medicinischen Klinik zu Erlangen.* Von Dr. HUGO ZIEMSSEN, O.Ö., Prof. der Spec. Pathologie u. Therapie, Director der Klinik, etc., und Dr. HERMANN ZIMMERMANN, Assistentarzt, etc.

The Cold-water Treatment of Typhoid Fever, according to Observations in the Medical Clinic in Erlangen. By Dr. HUGO ZIEMSSEN, Prof. of Special Pathology and Therapeutics, Director of the Medical Clinic and Polyclinic, and Dr. H. ZIMMERMANN, Assistant Physician, etc.

THE practical object of this book is to show the effects of cold water upon typhoid fever; to furnish statistics; to lay down exact methods of using cold water in this disease; to present statements of careful study of temperature under its use, and to afford proofs of the success which the authors claim to have followed upon the mode of treatment in question.

In 1861 Ernst Brand recalled the attention of the medical public to the use of cold water in typhoid fever, first adopted by Currie and his disciples. Following Brand, Ziemssen, Gietl, Niemeyer, Bartels, Jürgensen, Liebermeister, and Hagenbach in their respective clinics, entered upon a systematic use of hydro-therapeutics in typhoid fever, each and all becoming converted to the usefulness of the treatment, besides agreeing in the main in regard to the comparative utility of the various ways in which cold water was applied. Ziemssen first adopted Brand's method, that of applying douches to the upper half of the body of the patient, whose lower half was immersed in a bath of cold water. Brand recommends this as the most effectual process. Ziemssen soon discarded Brand's procedure, and passing through other modifications of this treatment, finally settled upon the "graduated full bath," the results of which are given in this book. His experience with the various applications of cold water was briefly as follows:—

(1) The tepid bath soon proved its utter inefficiency.

(2) The anti-pyretic effects of the cold douche in the half bath (Brand's method) were far less marked than those of the graduated full bath. Besides this, the patients resisted Brand's method, some of them shrieking under the shock of the douche, others becoming violent. Ziemssen insists upon the great benefit of the head-douche as a revulsive in stupor, but disapproves of the body douche.

(3) Cold wet compresses applied around the trunk and used by Brand, between the baths, to prevent a new rise in the temperature, were perfectly inert in the hands of Ziemssen, who found that besides distressing the patient by their weight, they disturbed his rest, caused chills, wet the bed-clothing, and produced scarcely any influence upon the temperature.

(4) The cold pack in a sheet wrung out in water of the temperature of 8° R. [50° F.] produced a greater anti-febrile effect than Brand's douche when four or five packs quickly followed each other, so that the individual packs lasted from five to six minutes. Let the patient remain fifteen minutes in the fifth pack, or for the same length of time in the fourth pack if chilliness have already set in, then carried to his own bed, and the temperature will be found to have fallen 1°–2.5° C. [1⅘°–4½° F.] The main advantages of this method are that the necessary materials (2 sheets, 2 blankets, and 2 beds) are always at hand, that the patient is kept in quietude and in a horizontal position. But the anti-pyretic effects of the graduated bath are so much more considerable, that Ziemssen considers the cold pack indicated only when the graduated bath is unobtainable, or when the patient is too weak to be moved.

(5) The *simple cold full bath* (temp. 18°–14° R.) [72½°–63½° F.] abstracts heat more rapidly than any other method; is simple and convenient in a well-ordered hospital or in private practice, especially if the same water be used several times. This form of bath, however, cannot generally be used. What is far preferable, in case of sensitive, nervous, weak, aged, or very young patients, also, where the fever is severe and patient wasted, in case of complicating heart disease, or great irritability of the nervous system, is,

(6) Ziemssen's method, the *graduated full bath*. In all the conditions just named, the temperature of the bath should at first be 28° R. [95° F.] During the stay of the patient in the bath, the temperature of the water should be gradually lowered to 24° R. [86° F.] Subsequent baths, according to the reactive powers of the patient and the resulting effects, should be very gradually cooled to a lower temperature. If the effects be satisfactory, the temperature should not be allowed to sink below 22° R. [81½° F.] If the fever be obstinate and patient quite robust, bearing the treatment well, the water may be gradually cooled to a temperature of 16° R. [68° F.] In case of poorly nourished children and chlorotic girls, Ziemssen found that water having a temperature of 23° R. [83¾° F.] sufficed to lower the body-temperature 2°–3° C. [3⅗°–5⅖° F.], no rise occurring until after a lapse of four or five hours. The lowering of the patient's temperature in consequence of a simple cold bath is more decided if patient remain fifteen or twenty minutes in the bath, than by a graduated bath of thirty minutes. If the simple cold bath be used but ten minutes, the result is nearly the same as that obtained from a graduated bath of thirty minutes' duration. Hence the former has the advantage of requiring only half the time, and of creating less trouble than the latter, which demands the constant addition of cold water. Ziemssen, therefore, allows the use of the simple cold bath, when the graduated bath becomes actually inconvenient. But the simple cold bath is not admissible under the conditions named in paragraph No. 5.

In opposition to the common advice that patients should be bathed in a tub which is pushed under them as they lie in bed, Ziemssen interdicts the *use of the bath in the sick-room*, since its preparation may disturb the patient. He directs the bath to be prepared in a neighbouring chamber, the patient to be carried thither on a rolling chair or stretcher, and put into a full bath which has a temperature 5°–6° C. (9°–10⅘° F.) below the existing temperatnre of the patient; *i. e.*, if the body-temperature be 40°–41° C. (104°–105.8° F.), the water should have a temperature of 35° C. (28° R., 95° F.). Two assistants should rub the entire body of the patient constantly and lightly with bare hands. Cold water should be gradually added by means of a rubber hose sunk below the surface of the bath, and a means provided for escape of surplus water. When the temperature of the bath after a lapse of ten or fifteen minutes has become lowered to 16° R. (68° F.), the supply should be stopped. A lower degree is seldom necessary. The patient should remain in the bath twenty or thirty minutes, or until, in spite of the rubbing, he begins to shiver. He should then be hastily wiped, wrapped in a warmed blanket, carried quickly to a previously warmed bed, and be well covered. In private practice the sick-room may be set in order and aired during the absence of the patient. After the bath the patient must have absolute quiet, so that the sleep, which commonly follows a lowering of the temperature, may not be disturbed. Ziemssen further recommends the administration of a glass of wine before and after the bath, especially if there be weakness of the heart; also that hot bottles be placed at the feet and the lower extremities of the patient be well wrapped. The fall of the pulse almost to disappearance, during or after the bath, is an indifferent symptom which generally accompanies a decided lowering of the temperature.

Immediately, or at latest an hour, after the bath, the temperature (in the rectum) shows a fall of 1°–4° C. (1⅘°–7⅕° F.). During the first few days, this fall of the temperature is neither so marked, nor is the degree acquired by the baths so enduring, as on subsequent days. So soon as the temperature has again reached 40° (later 39.5°), which may be decided, in case no thermometer be at hand, by reappearance of the flush in the face, heat, and restlessness, the bath should be repeated, be it day or night.

During the first few days of the fever four or five baths in the 24 hours are necessary. Later two or three baths. In severe attacks the temperature rapidly reascends.

The beneficial effects of the treatment, according to Ziemssen, are the following:—

(1) It lessens the duration and severity of the fever and protects the patient from the usual sequelæ.

(2) The patient bears the abstraction of heat much longer and better without chills than by any other form of cold water treatment.

(3) Patients, without exception, praise it, while they energetically resist the other forms; and further, their friends do not object to the graduated bath, but oppose the use of other modes of applying cold water, because of their apparently unkind effect.

The subjective sensations of the patient after the bath are, chilliness, uncomfortable sensations about the heart, and distress in breathing. These are frequent symptoms, but are far less pronounced under the Ziemssen procedure than when a result of other methods. The hour of the day at which the bath is used influences its effects. From 6 to 7 o'clock A.M., and 6 to 7 P.M. are the hours in which the best results of the treatment are shown. The bath from 1 to 2 o'clock P.M. is nearly as helpful as the morning bath. Hence, these three hours are to be preferred. The number of baths per day is influenced by the progress of the patient. The temperature should be taken in the rectum. Ziemssen suggests that the patient has not strength to close the axilla upon the thermometer for a sufficient length of time, and finds that the instrument requires fifteen to twenty minutes in the axilla, but only an average stay of four minutes in the rectum.

As contraindications, the author mentions hemorrhage of the bowels as the most important; obstinate epistaxis, perforation of the bowel, severe disturbances of the brain, which are not effects of the fever, and great fear of the water. The latter objection may be overcome by giving, at the outset, a bath of an agreeable temperature, and gradually cooling. All methods save Ziemssen's are otherwise here contraindicated. Menstruation, severe bronchitis, collapse of the lungs, and pneumonia are not considered contraindications. Pregnancy need not be looked upon as an objection to the use of the graduated bath, neither mother nor child being prejudiced. Great weakness of the heart does not exclude the use of Ziemssen's method, but much watchfulness is necessary.

In regard to the influence exerted under his treatment by the age of the patient and by the severity of the attack, Ziemssen observes, that—

(1) The graduated full bath in a severe type of the fever in children, commonly causes a greater fall of the temperature than is attained in the lighter attacks in adults.

(2) The minimum fall of the temperature in children, in severe attacks, is about 2° C. [$3\frac{3}{5}$° F.]; in mild, in adults, about 1.5° C. [$2\frac{7}{10}$° F.].

(3) A fall of more than 2.5° C. [$4\frac{1}{2}$° F.] in temperature, cases being light, in adults, and of more than 3.5° C. [$6\frac{3}{10}$° F.], even in children, is relatively rare.

(4) A fall of less than 1° C. [$1\frac{4}{5}$° F.], in mild adult cases, is rare; in children still more rare.

(5) In severe adult cases the effect of the graduated bath cannot be prognosticated with so much certainty. The average fall in the temperature (or that most frequently observed) in these cases is 1°–2° C. [$1\frac{4}{5}$°–$3\frac{3}{5}$° F.], but may not attain a fall of even 1° C. On the other hand, the fall may exceed 2.5° C. [$4\frac{1}{2}$° F.].

The energetic effect of the treatment in children evidently arises from the relatively greater amount of heat abstracted in comparison to the size of the body. A child's body offers a comparatively larger surface to the action of the water, the effect of which also seems to reach more deeply into the body of the child than of the adult. It is further remarked that the same result is very frequently attained in children by a far less degree of cold than would be necessary in the case of adults.

Ziemssen illustrates these points by well-chosen cases, the details of which are too lengthy to be given here. The inconstancy of the effect of the cold water treatment upon the temperature, in severe adult cases, is shown by statistics.

In one case 47 baths produced a fall of only 0.5°–1.0°; 16 baths caused a cooling effect of 1.1°–1.5°; and only 2 baths reduced the temperature 1.6°–2.0°. In a second case, the temperature fell only 0.5° from the effects of 5 baths; 4 baths caused a fall of 0.6°–1.0°; 3 baths, 1.1°–1.5°; and only one bath affected the temperature to the extent of 1.6°–2.0°. These cases were of the intense type, and lacked the usual morning remission during the first stage of the attack.

As regards the duration of the temperature acquired by the action of the baths, it is shown that following their administration the temperature in 147 cases, all being children, remained constant 6.1 hours; in 76 mild adult cases, 6.8 hours; in 203 adult cases with distinctly remitting fever, 6.5 hours; in 84 adult cases, which showed no remission, 3.1 hours. These figures indicate that in severe cases which failed to show remission, a lowering of temperature was not only attained with difficulty, only a moderate effect being produced, but that it also rises twice as soon as in cases, even severe ones, accompanied by remission. In severe cases of remitting character the age of the patient carried with it a distinct influence upon the duration of the antipyretic effects, since in children, in spite of a more rapid fall of the temperature, its constancy was of shorter duration than in severe adult cases. Ziemssen also proves that the later the stage the more lasting and the more efficient is the action of the bath upon the temperature, both in children and adults, in severe or mild, remitting or non-remitting cases.

Referring again to the hours at which the baths are best given, systematized observations upon 436 cases show that the temperature was highest at early morning and at 7 o'clock P. M. Between these hours the temperature stood from 0.4°–0.6° lower than at the hours named. Hence Ziemssen recommends these three periods as the most favourable for the treatment. The temperature after the baths remained stationary for a greater length of time between evening and morning. Between early morning and noon it rose twice as quickly as during the night hours. These statistics make it evident that the patient enjoys a remission of the fever several times daily, while under the ordinary treatment the temperature falls only once in the twenty-four hours.

The comparative effect of the different methods of using hydrotherapeutics in typhoid yields, according to Ziemssen, the following proportions, D : P : : G : C (D. douche; P. pack; G. graduated bath; C. simple cold bath) = 1 : 2 : : 3 : 4. The simple cold bath, therefore, acts with greater intensity than the Ziemssen method, but the latter is preferable because, by proper administration, it can be used in almost any case which admits of moving the patient, while the simple cold bath in many cases is utterly contraindicated.

The characteristic temperature curves under the Ziemssen method show that the effect of the baths is least constant if the exacerbation has set in, and most constant when remission has begun; also that with progressive exacerbation the constancy of this effect, at first slowly, and later always more quickly, increases. Inversely, with progressive remission, the duration of the effect of the baths decreases, in all probability between night and morning.

In regard to the effect of the baths upon the course and duration of the fever, Ziemssen states that while this treatment cannot cause an abortion of the fever, in many cases, especially of the mild variety, its *duration* may be shortened. In support of this statement a table is given showing that in 6 cases the duration was from 15–21 days; in 7 cases 22–28 days; 7 cases ran their course in 29–42 days; 4 cases lasted 50–60 days. Computation as to the length of the stage of convalescence is not sufficiently exact to merit notice. Ziemssen claims for his treatment, however, the power of shortening the remitting stage.

The effect of the cold-water treatment upon the individual symptoms of typhus is next considered. "Concerning the development of the so-called typhoid condition," says Ziemssen, "we can only corroborate the statements of Brand, Jürgensen, Hagenbach, and Liebermeister, viz., that under the hydropathic procedure nervous disturbances are less frequent, and far less severe than under other forms of treatment, and we adopt the theory of Liebermeister, that since the high temperature of the blood is the principal cause of these disturbances, a lowering of the temperature is the best means of preventing their development. This result is the sooner and the more perfectly attained according as the antipyretic treatment is the earlier adopted after the onset of the attack.

Patients suffering from cerebral symptoms become partially freed from them during the bath. One patient, while in a comatose condition, was put into the bath and recovered his senses during its course. Others, who under delirium fought against being put into the bath, were calmed to sleep by its effects. Severe delirium, coma, stupor, etc., continued in spite of the baths in those only of Ziemssen's patients who exhibited either an uncommonly high temperature and experienced only a slight diminution of the same, or who were notoriously in temperate. The continuation of the brain symptoms in the latter class depended, without doubt, says Ziemssen, less upon the intensity of the fever than upon the effect of chronic alcoholism and a consequently weakened recuperative and resistant power of the brain.

The condition of the heart's activity, as well as that of the pulse, form a valuable standard for judging of the value of the cold-water treatment of typhoid. According to Liebermeister, a rise in the temperature of 1° C. (1⅘° F.) implies on the average an increase of 8 beats in the pulse. Clinical experience shows that the pulse-frequency is greater according as the fever is more severe, and also that this increase in the pulse may with great certainty be traced back, in part, to a synchronous rise in the temperature. This leads us to infer that, by artificially lowering the temperature by baths, the heart's beat would be correspondingly retarded. Ziemssen's charts show the justness of this inference, the lines of the pulse and temperature curves in every instance running parallel with each other, ascending and descending together. The average antipyretic effect of the baths upon the temperature is (Ziemssen) 1.5° C. (2.7° F.); the average simultaneous retardation of the pulse-frequency is 14 beats. Liebermeister found that a fall of 1.5° C. in temperature corresponded with 12 beats retardation in the pulse. Brand claims that the dicrotic pulse disappears by this method. Hagenbach saw this result but rarely. Ziemssen agrees with Jürgensen, who asserts that the dicrotic pulse is generally present under the hydropathic treatment, and that the baths do not affect it. The immediate effect of Ziemssen's method upon the pulse, under his own administration, was the following: While the patient was in the bath the pulse became small and soft; in individual cases the pulse disappeared, and cyanosis set in. Ziemssen does not believe a narrowing of the peripheral vessels by spasm is sufficient to explain this feebleness of the pulse and the appearance of cyanosis, but attributes both phenomena to weakness of the heart. This cardiac feebleness, though gradually disappearing, often endures for hours, and although Ziemssen has but very rarely observed disquieting symptoms, he considers it prudent to forbid energetic antipyretic treatment in cases where there may be the slightest suspicion of cardiac weakness.

The influence of cold-water therapeutics upon the origin and development of respiratory disturbances is considered by Ziemssen and others as favourable. Hagenbach asserts (1) that under the hydropathic treatment pneumonia occurs not only more rarely than under other modes of treatment, but that the earlier the treatment is adopted the rarer will be the development of pulmonary inflammation; (2) that this treatment renders bronchial catarrh far less severe, on the average, than when cold water is not used. Ziemssen's experience was that bronchial catarrh occurred just as frequently under cold-water as under different treatment, but found that the baths lessened the catarrh, and that their best effect consisted in protecting the patient from the catarrhal sequelæ. This result relates especially to prevention of condensation of the lung tissue. Ziemssen's conclusions are:—

> (1) That splenization of the lungs occurs much more rarely under his method than when the patient is not treated by the cold-water procedure. (2) That the apparent condensation of the lung tissue is generally only a temporary collapse. (3) That even in permanent collapse a later lapse into pneumonia is to be feared only when the reduction of the fever by means of the bath is insufficient.

After the bath, when the consequent chill has been overcome and the patient is at rest, the frequency of respiration becomes diminished. This doubtless depends upon reduced temperature, and a resulting diminution of the respiratory demand for interchange of gases. Ziemssen here mentions the occasional occurrence of epistaxis after the bath, and considers it possible that this hemorrhage, as well as that from the bowels, may be a collateral fluxion of the mucous membrane, which arises in consequence of an ischæmia of the surface of the body produced by the baths.

The commonly dry and furred condition of the tongue, lips, and mucous membrane of the mouth becomes decidedly improved by the baths, the condition being only temporary if the baths be used early in the attack. This improvement results from diminution of temperature.

Meteorismus and abdominal pains occurred in 14 out of 62 of Ziemssen's cases, almost immediately after the bath. In the remaining cases in which abdominal sensitiveness on pressure existed, the condition continued unchanged, or diminished only gradually after the baths.

Diarrhœa appears to be less frequent under the cold-water treatment, if the latter be adopted very early. The majority of Ziemssen's cases, however, required the ordinary treatment for diarrhœa.

In case of hemorrhage of the bowels, the hydropathic treatment is unsuitable, unless adopted so early as to limit the extent and intensity of this lesion. Hence, except the hemorrhage be controlled very early in the attack the baths should either be abandoned, or at least be used with such care as to prevent occurrences of hemorrhage. The lukewarm and very gradually cooled bath should only be used, for a collateral fluxion in the mesenteric artery takes place the more easily according as the cooling of the periphery of the body is rendered more sudden and intense. Ziemssen treats hemorrhage of the bowels by ice-bags upon the abdomen, the administration of liq. ferr. sesquichlor., alum, ice pills, and absolute rest.

Our author does not agree with the statement of Gerhardt that each bath lessens the size of the spleen, but states that after *several* baths the volume of this organ becomes diminished. He observed in the post-mortem room that the spleen of patients who had been treated with cold water were smaller, on a corresponding day of the fever, than in patients treated in the usual manner.

Roseola appear to be just as abundant under the water treatment as is ordinarily the case.

Decubitus was observed in only six out of sixty-two of Ziemssen's cases. This favourable result is attributed less to a lowered temperature than to the use of large water cushions.

Herpes facialis and erysipelatous inflammation of the face occurred in two cases respectively.

Sweating occurred under this treatment at the ordinary time (beginning of second, third, or fourth week), but was not considered to contraindicate the treatment.

Albumen in the urine frequently appeared under the water treatment, but not so commonly, perhaps, as in cases otherwise treated. It did not appear that the baths produced any especially favourable effects upon the urinary system. The quantity of urine secreted showed an increase under the hydropathic treatment, the urine being lighter in colour, clearer in quality, yielding a lighter specific gravity.

The effect of the fever upon the muscular system is much less under cold-water than under the ordinary treatment.

Ziemssen found actual degeneration of the muscles in only one of his fatal cases, and his patients made less complaint of muscular pains than is usual. Since a high fever destroys the individual elements of the body, this favourable condition may be attributed to reduced temperature. These observations of

Ziemssen's are the more reliable from the fact that under hydrotherapeutics the intelligence and consciousness of the patient are commonly far better than under the usual treatment of typhoid, hence his statements are oftener obtained and more dependable. The author also observes that when the patient convalesces he possesses more muscular strength after cold-water treatment. Loss of weight is less under the hydropathic treatment and the patient eats more and digests more rapidly and more perfectly than under the old régime.

Finally, Ziemssen claims that it has been fairly enough proven that by means of a systematic use of cold water the mortality in typhoid becomes decidedly lessened. The average death-rate, however, varies in the reports of different writers.

Out of 170 cases Brand lost none. Bartels and Jürgensen lost 5 out of 160 cases, or 3.1 per cent. The previous mortality in their hospital had been 15.4 per cent. Omitting mild cases, their loss under cold-water treatment was 4.9 per cent. Liebermeister and Hagenbach report a mortality of 42 out of 470 cases—8.8 per cent. Their former death-rate was 16.1 per cent. under the common treatment. Ziemssen's own statistics show a mortality of 7.5 per cent. under the cold-water method against 30.2 per cent. (!) by other procedures.

He concludes his interesting monograph as follows: "For the reasons already stated we could not adopt Brand's method of treating typhoid, and it was only when we began the use of the graduated full bath that we became converts to hydrotherapeutics, for this form of treatment appeared not only more agreeable to the patient, but also achieved, with more certainty, the object in view. The experience which we have transcribed in these pages, together with what has been written by our contemporaries, will, we hope, suffice to secure for the cold-water treatment of typhoid a permanent place in the practice of medicine, and impart to physicians the conviction that this form of treatment, if early adopted and systematically used throughout the attack, will yield far better results than any other therapeutics; that, on the other hand, an imperfect and timid use of hydrotherapeutics will exert next to no effect upon the disease. We lay the greatest stress upon the importance of a methodical use of the baths *early* in the attack, and advise trial of the treatment, proper care of course being observed, even in advanced cases, since surprisingly happy results are often thus attained."

The work is written in the full and searching manner of the Germans. The results of the cold-water treatment are evidently presented with great truth and fidelity. Some of the questions require further elucidation, but the book proves beyond a doubt the real efficacy of the treatment which it discusses, and which we earnestly hope may receive a thorough trial in our own hospitals. To the testimony of the book we may add a word in regard to our personal observations of the practice of our honoured friend, Prof. Traube, of Berlin. Traube claims so low a death-rate, under this treatment, as 2 per cent, and during the months in which we visited his wards of the Charité Hospital he confined himself strictly to the use of cold water in all his many cases of typhoid.

Traube is not an enthusiast, but a cool, keen, cautious practitioner and clinician, with a healthful amount of scepticism. His earnest support of the hydropathic treatment of typhoid, and the great benefit which he claims to have derived from its use, afford the strongest evidence in its favour, Traube being one of the most honest teachers in Germany. H. O.